

Separating Solutions

Solutions are **homogeneous**, meaning their parts are fully mixed and have very similar properties. This means they can be very hard to separate. The most common method is to make the solute or the solvent change **state** so it can be removed from the solution.

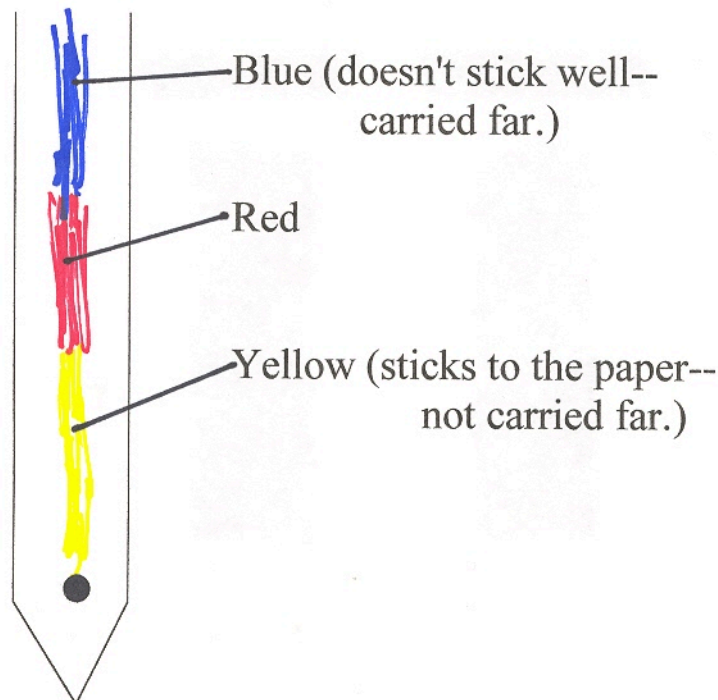
There are three main ways to separate a solution:

- I. Chromatography
- II. Evaporation
- III. Distillation

I. CHROMATOGRAPHY

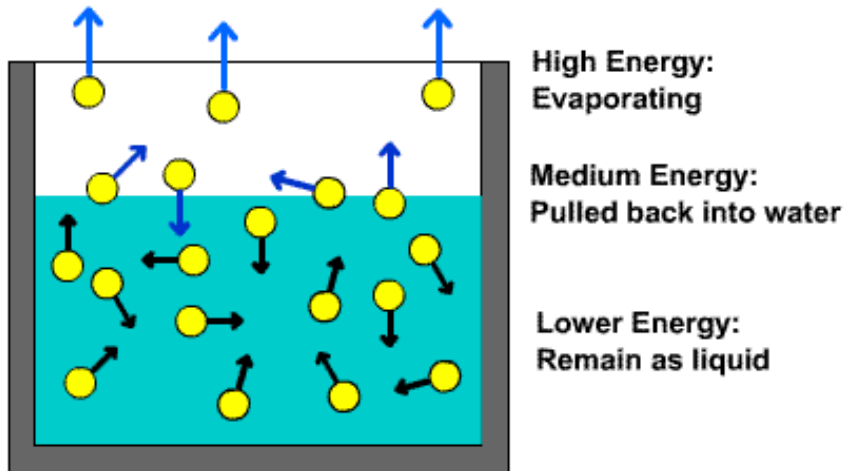
- A concentrated drop of solution is placed on the paper
- The paper is dipped into a solvent like water
- The solvent particles are **attracted** to the paper particles and so travel up the paper towards the solution
- The solution particles are dissolved by the solvent and are carried different distances through the paper
- Different compounds move **different** distances

Paper chromatography separates mixtures using a solvent (water) that carries a solute (ink) up a strip of paper.



II. EVAPORATION

- Uses heat to increase the temperature
- The **liquid** particles leave the solution as gas because they heat up quickly and move faster than the **solid** particles
- Over time the solute remains as the solvent escapes as gas



III. DISTILLATION

- Distillation is similar to evaporation, but it lets you keep both the solute and the solvent
- You again heat up the solution, vaporizing the solvent (turning it into gas), while the solute remains
- But you then collect the gas solvent by having it **condense** on a cool surface (turn back into a liquid)
- We use this to remove **compounds** from drinking water

